DOCUMENT RESUME

ED 107 076 EC 072 860

AUTHOR Muma, John R.
TITLE Phonological Contexts: Determinants and Correlates in Clinical Assessment.
PUB DATE 74
NOTE 8p.; Paper presented at the Annual Meeting of the American Speech and Hearing Association (Las Vegas, Nevada, November 1974)

EDRS PRICE MF-$0.76 HC-$1.58 PLUS POSTAGE
DESCRIPTORS *Articulation (Speech); Exceptional Child Education; *Speech Evaluation; Speech Handicapped; Speech Handicaps; *Test Construction

ABSTRACT

Discussed is a procedure being developed for the clinical assessment of children's phonological patterns. Reviewed are recent developments in the psycholinguistic/sociolinguistic literature which support the basic criteria for the new procedure (such as the provision for child phonology rather than adult phonology). The significance of contextual influences is stressed, and the linguistic and cognitive systems to be considered are outlined. (LS)

ED107076

U S DEPARTMENT OF HEALTH
EDUCATION & WELFARE
NATIONAL INSTITUTE OF
EDUCATION
THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY

PHONOLOGICAL CONTEXTS:
DETERMINANTS AND CORRELATES IN CLINICAL ASSESSMENT

John R. Muma, Ph.D.
Department of Speech Communication, Room 38
State University of New York at Buffalo
4226 Ridge Lea Road
Buffalo, NY 14226

Paper Presented at the Annual Meeting
American Speech and Hearing Association
Las Vegas, Nevada
November 5-8, 1974

EC 07.2868

American Speech and Hearing Association Convention, 1974

Phonological Contexts: Determinants and Correlates In Clinical Assessment

John R. Muma

Let's face it. The traditional three position place and manner articulation tests and their variants do not do what they are purported to do. While they expedite clinicians' desires to get data, such data provide only very gross and generally superficial clinical evidence. While deep tests (McDonald, 1964) offer substantially greater clinical opportunities to appraise speech articulation, the particular systematic phonemic variations have limited correspondence to naturally occurring phonetic contexts. Moreover, neither traditional nor deep tests have adequate provision for child phonology. At most, clinicians regard 'deviant' articulatory patterns in terms of such misleading notions as omissions, substitutions, or distortions of adult phonological systems.

It behooves us to develop speech articulation tests or procedures which more adequately reflect naturally occurring behaviors. This paper reports an attempt to develop such a test. The present status of development is on conceptual and formulation levels. Compton, Oller, Daniloff and Stevens, offer similar fully developed clinical assessment procedures.

Relatively recent developments in the psycholinguistic/sociolinguistic literature indicate that differences between child and adult phonology should not be characterized as errors or deviations. Child phonology is not a deviant adult system but a restricted system. Perhaps more importantly, this literature has shown conclusively that verbal behavior must always be viewed in relational or contextual terms rather than independent acts. This perspective extends across the full spectrum of verbal behavior. Chomsky (1965) has argued convincingly that verbal products, namely utterances, issue from grammatical systems that are inextricably related to each other and to underlying cognitive systems. Bloom (1970, 1973) has shown that grammatical structures can only be adequately appreciated by defining their referential functions and contexts. Linguistic systems are defined structurally and partially functionally in terms of co-occurring systems. Underlying cognitive systems, particularly memory processes, are defined in terms of contextual determinants (Jenkins, 1973) and operate under contextual constraints (Johnson, 1965; Yngve, 1960). Contextual evidence appears to be one of the strongest ways of appreciating underlying systems.

The ramifications of contextual evidence are rather direct in the clinic. First, level of performance as defined normatively or psychometically (ITPA, PPVT, I.Q. tests, Schuell test, Developmental Sentence scores, or types, etc.) is only tangentially related to contextual issues. Second, contextual evidence is relative to underlying dynamic systems rather than absolute (Kagan, 1967). Third, the relativity of contextual evidence provides potentially important information for intervention. Such evidence offers opportunities to establish alternative investments in areas directly related to individual needs. Fourth, individual differences are are more fully appreciated by contextual evidence than 'level of performance' evidence. The co-occurring and restricted structures procedure (Muma, 1973) outlines a way of ascertaining contextual influences for syntactic systems. Oller (1973) and Compton (1970) have shown major clinical ramifications of contextual information in child phonology.

Contextual influences are potentially, at least, very broad and pervasive across linguistic and possibly communicative systems. A variety of contextual influences (determinants and/or correlates) have been documented within phonology. Foreward and backward coarticulatory or spreading effects as a function of contextual influences have been well documented by Daniloff and Moll (1968) and many others. Contextual influences obtain both within and across syllabic structure. While we know that contextual influences are evident and pervasive across linguistic systems, we do not know how pervasive such influences may be nor the nature of such influences

Clearly, the coarticulation literature has shown that contextual influences are richly evident within the phonological system, both within and across syllabic structure. Inasmuch as phonological systems are inextricably tied to other grammatical and cognitive, indeed, social systems, it is at least conceivable that phonological correlates and possibly determinants may extend beyond phonological systems. Menyuk (1972) and Menyuk and Looney (1972), suggested that some deviations in child phonology may reflect restricted knowledge of inflectional or other linguistic systems. Griffith and Miner (1973) and Leonard and Ritterman (1971) indicate that word frequency relates significantly to 'correct' or 'incorrect' production of speech sounds. Wicklegren (1966) and Saxman and Miller (1973) argued, with evidence, that phonological deviations are intimately tied to memory processing. It is conceivable that other grammatical and related cognitive systems may have differential influence on phonetic contexts.

Given the significance of contextual influences, it is reasonable to assume that clinical assessment of phonological patterns should meet the following three criteria:

(a) Extend across not only phonological but other grammatical and related cognitive systems.

(b) Provide for child phonology as opposed to an orientation exclusively on adult phonology.

(c) Ascertain individual performance in terms of one's grammatical systems rather than a comparison of level of individual performance to normative performance.

A clinical assessment procedure is now being conceptualized and formulated to meet these criteria. The following outline shows the nature ans scope of inquiries across various linguistic and cognitive systems.

Phonetic

1. Number of syllables in target words.
2. Loci of target syllables in target-words.
3. Structural description of target syllables.
4. Distinctive feature portrayal of target syllables.

Syntactic

1. Form class of target words
2. Sentence type
3. Slot function of target words
4. Morphological markers (inflection) specific to target sound.

Semantic

1. Sentence function of target word
2. Animateness of target word
3. Case of target word

Memory

1. Primacy/recency effects (within syllable, word string, sentence string).

Stability

1. Three replications

Phonetic contexts will be defined by a code for syllabic structure and phonetic feature clusters for each phoneme in a given syllable. The present version deals only with the /s/ phoneme. Subsequent versions will extend to other phonemes

My wife and I conducted a four month survey of all words containing an /s/ phoneme in a dictionary for the elementary grades. We identified and coded approximately five thousand words. The syllable in which an /s/ appeared was coded for syllabic structure, loci of target syllable in the word, number of syllables in the word, and relative stress of the target syllable. The syllabic code maintained phoneme identities thereby allowing the assignment of feature clusters. Irwin and I compiled a phonetic feature list to be used in the assignment process. The lists were derived from the Chomsky and Halle (1968) and Ladefoged (1971) feature lists. The present feature list does not extend into child phonology. Eventually it will hopefully contain that capability as recommended by Compton, Daniloff, and Oller. The phonetic feature list includes: oral, voiced, continuant, movement, lateral, labialize, tense, fusion, high, mid, low, bilabial, labio-dental, lingua-dental, lingua-alveolar, lingua-palatal, glottal, open, approximation, obstruction, and occlusion.

Syntactic contexts are identified according to the following:

(a) Form class of target words

(b) Sentence type

(c) Slot function of target words

(d) Inflectional markers associated with the target word

Semantic contexts are identified by case functions of target words and animateness of target words. Memory functions will be calculated in terms of primacy/recency effects within syllables, word, and sentence strings.

Verification of performance for selected contexts can be made by having a client repeat selected contexts.

Irwin and I have conducted a frequency distribution study of the syllable codes which issued from our dictionary search of /s/ 'words'. Irwin will now present a brief summary of that study.

REFERENCES

Bloom, L.- Language Development: Form and Function in Emerging Grammars. Cambridge: MIT Press (1970)

Bloom. L.- One Word at a Time. The Hague: Mouton (1973)

Chomsky, N. - Aspects of the Theory of Syntax. Cambridge: MIT Press, (1965)

Compton, A. - Generative Studies of Children's Phonological disorders. Journal Speech and Hearing Disorders, 35, 315-339 (1970)

Daniloff, R. and Moll, K. - Coarticulation of lip rounding. Journal Speech and Hearing Research, 11, 707-721 (1968)

Griffith, J. and Miner, L. - A phonetic context approach to articulation therapy. American Speech and Hearing Association Convention, Short Course, Detroit (1973).

Jenkins, J. - Memory processes. In Miller, 6. (ed.). Communication, Language, and Meaning, N.Y.: Basic Books (1973).

Johnson, N. - The psychological reality of phrase structure rules. Journal Verbal Learning Verbal Behavior, 4, 469-475 (1965)

Kagan, J. - On the need for relationism. Americal Psychologist, 22, 131-142(1967).

Ladefoged, P. - Phonological features and their phonetic correlates. Working papers in Phonetics, 21, UCLA (Nov., 1971).

Leonard, L. and Ritterman, S. - Articulation of /s/ as a function of cluster and word frequency of occurrency. Journal Speech and Hearing Research, 14, 476-485 (1971).

McDonald, E. - Articulation Testing and Treatment: A Sensory-Motor Approach. Pittsburgh: Stanwix House (1964)

Menyuk, P. and Looney, P. - Relationships among components of the grammar in language disorder, Journal Speech and Hearing Research, 15, 395-406 (1972).

Menyuk, P. - The Development of Speech, N.Y., Bobbs-Merrill (1972).

Muma, J. - Language assessment: The co-occurring and restricted structures procedure. Acta Symbolica, IV, 12-29 (1973)

References - continued - John R. Muma

Oller, K. - Regularities in abnormal child phonology. Journal Speech and Hearing Disorders, 38, 36-47 (1973).

Saxman, J. and Miller, J. - Short-term memory and language skills in articulation-deficient children. Journal Speech and Hearing Research, 16, 721-730 (1973).

Wicklegren, W. - Distictive features and errors in short-term memory for English consonants. Journal Acoustical Society of America, 39, 388-398 (1966).

Yngve, V. - A model and an hypothesis for language structure. Procedings Am. Phil. Soc., 194, 444-466 (1960).